**Things before the meeting – 11/18/2021**

# Things to know about incinerators

1. Incinerators have low economic pressures, because are typically owned by municipalities and not subject to international competition.
2. The toxic impact of dioxins came out in the 70s. in 1987, the iarc declared dioxins as a probably carcinogenic substance. In 1997 it was declared as a certainly carcinogenic substance.
3. Denmark is country particularly active in favoring incineration of waste at the expense of landfilling. In 1997 it was the first country in the world to introduce a ban on landfilling of waste that can be incinerated.
4. In 1986 the energy 2000 program was launched, in order to lead incineration plants that generated heat to generate power as well.
5. In 2018, Denmark imported 1 million tons of waste from UK and Germany, this is due to the fact that Danish incinerators have excess capacity and that Denmark needs waste is order to produce electricity. On of the reasons why closing incinerators is very costly is that some plants were financed by loan guarantees and are owned by local municipalities.
6. The smallest incinerator in Denmark is ronne, which is a town in Bronholms.
7. The two newest incinerators are in Compenhagen and in Roskilde. They are at the forefront of green technology and they are also valuable from an architectural point of view. Nevertheless, the COWI report says that also the incinerator in Roskilde should be shut down by 2030.
8. As far as I understood, in Denmark also recycling is very important. The more the Danish recycle waste, the more they need to import waste from abroad. The thing is that these incinerators were built by municipalities and they were very expensive; from the point of view of these municipalities it would be very hurtful to close them in advance.

# The Orsted case:

Orsted in 2005 (when it was still called DONG) merged with Elsam A/S, another company in the electricity generation sector which owned these incinerators (from the 2007 map contained in the book on the 100 years from the first incinerator in Denmark):

1. Frederishavn (now owned by **Frederikshavn Affaldskraftvarmeværk (municipality owned),** sold in 2012 <https://da.wikipedia.org/wiki/Frederikshavn_Affaldskraftvarmev%C3%A6rk>)
2. Haderslev (in 2013 the plant was shut down)
3. Holstebro (now owned by MEC Bioheat & Power (it is owned by a private company called   
   VESTFORSYNING VARME A/S), sold in 2015, <http://biomassmagazine.com/articles/11917/dong-energy-divests-its-last-waste-fired-chp-plant> ).
4. Horsens (now owned by Fjernvarme Horsens A/S, sold in 2013 <https://datacvr.virk.dk/data/visenhed?enhedstype=virksomhed&id=35520104&soeg=Endelavevej%207%208700%20Horsens&type=Alle&language=en-gb>, it is owned by a cooperative)
5. Odense (now owned by Fjernvarme Fyn Affaldsenergy A/S (municipality owned), sold in 2010 to Swedish company Vattenfall, which sold the facility to the municipality owned company <https://waste-management-world.com/a/in-depth-danes-breathe-new-life-into-ageing-waste-to-energy-plant>)

# Things to know about the general equilibrium model

The problem of the spatial equilibrium model is that both the labor and the land market must clear. That’s why this problem is much more complex than the usual hedonic model. If you ignore the firm side of the market, the matching aspect of the problem has been lost.

So the general equilibrium model is based on two market: labor (a mobile factor) and land (a site specific factor). Actually the housing market can be included in the model as an extension. Anyhow, empirically, you run the regression for the wage and the regression for housing prices or rents, and nobody cares about land. The idea in the model is that land can be either residential or used for production purposes.

When the amenity is unproductive and increases utility, it is clear that wage must be high in the low amenity location because firms need to be distracted and workers need to attracted.

When land is not a factor of production, then wages are determined by the cost function and land captures the entire amenity value.

When you generalize the model to embed the housing market as well, you consider that lend enters a housing production function, and it increases utility through the consumption of housing. So the indirect utility function will depend on the housing price p. on the production side, you have another unit cost function (which depends on w and r), which must be equal to the housing price. So basically to find the equilibrium you have three equations:

1. Indirect utility function (which depends on the housing price and on wage) must be equal to a constant.
2. Unit cost function for the consumption commodity (which depends on r and w) must be equal to one.
3. Unit cost function of housing must be equal to the housing price.

You go for the reduced form and you find find r, w, and p as a function of s. empirically, the equation related to the housing prices has received much more attention.

The reason why in the most primitive model you need to consider land and not housing is that housing is not a factor of production. So if you considered only housing, then there would be a problem because you would rule out the firm side, which is wrong, because also firms decide upon a location and wages adjust to their decision as well.